Biotech solutions for crop protection and quality improvement

QUT research accelerates new breeding technologies for rapid crop improvement in the real world.

As part of a European 2020 project called Newcotiana, our research team is developing innovative biotechnology solutions for insect and viral crop protection, and plant-based production of antibodies and vaccines for medical therapy. This has involved assembling the complete genome sequence of Nicotiana benthamiana, the most widely grown biofactory plant in the world, and the creation of novel genome editing technologies. N benthamiana is currently used to produce therapies and vaccines for diseases such as influenza, Ebola, HIV, Hepatitis C, malaria, rabies and cholera. These new technologies will greatly increase the yield and spectrum of these products.

Our researchers are also collaborating with Corteva AgriSciences on a new form of insect protection by delivering trans-kingdom RNAi through chloroplast expression.

Our key areas of plant genomics expertise include:

- sequencing and assembly of complex plant genomes
- developing novel ways of delivering guide RNAs for genome editing
- metabolic engineering of wax, oil, pigment, and defence pathways
- engineering genomes of polyploid plants and their chloroplasts.

Our global partners include Corteva (USA); Oxford University (UK); John Innes Centre (UK); Max Planck Institute (Germany); VIB (Belgium); The Italian National Agency for New Technologies, Energy and the Environment (ENEA, Italy); and the Institute for Plant Molecular and Cell Biology (BMCP, Spain).